

FIG. 1.

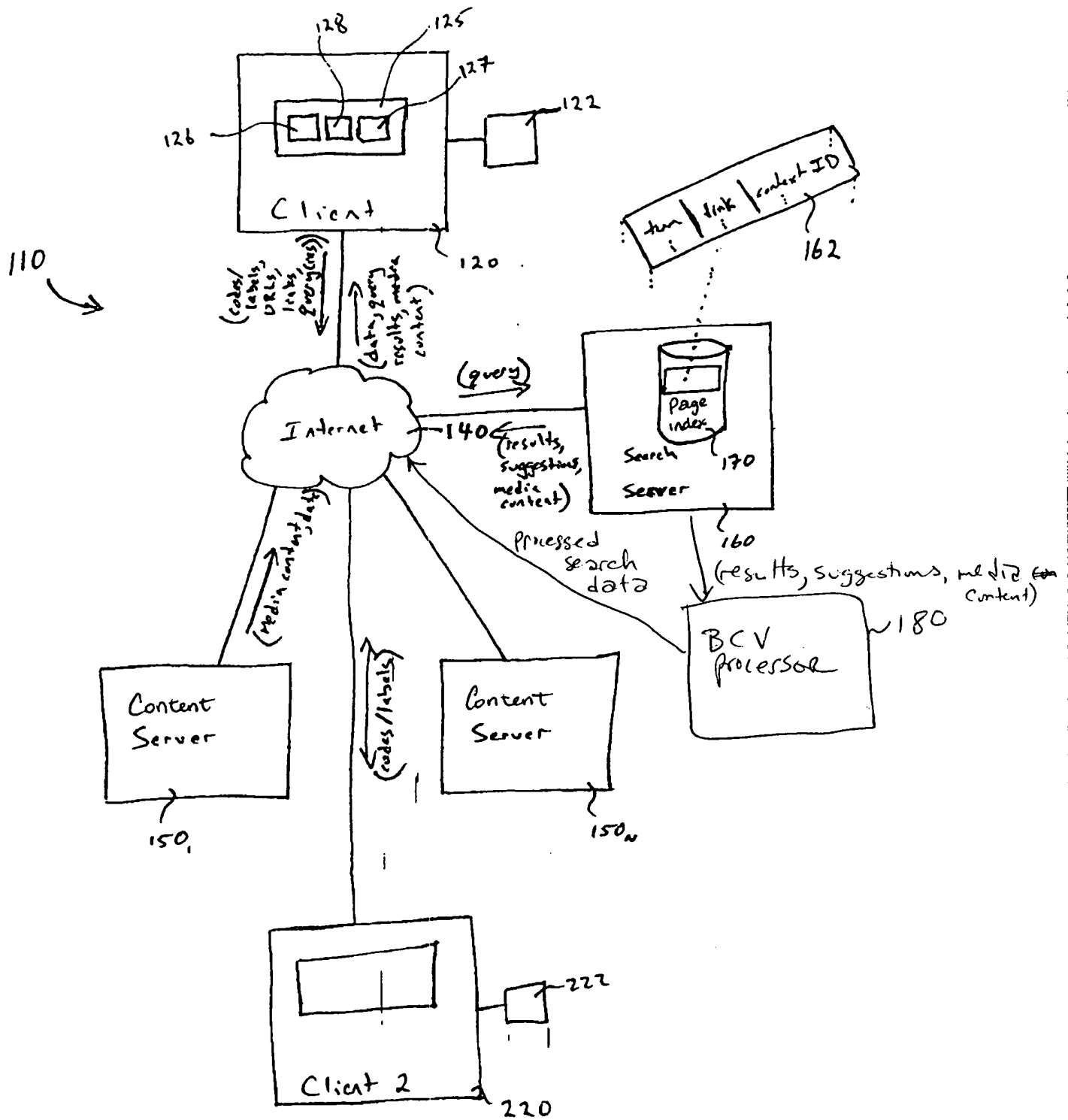


Figure 2

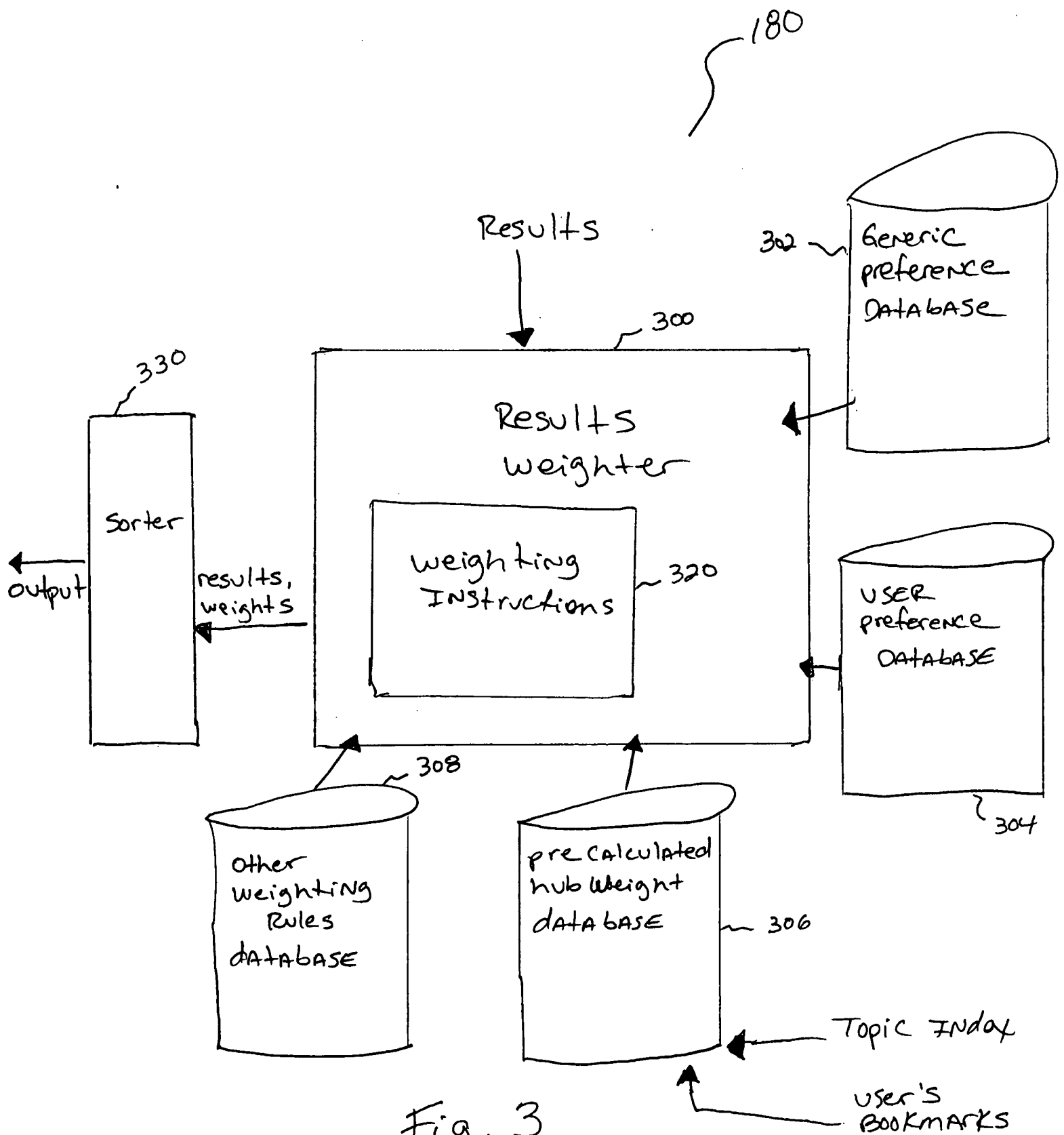


Fig. 3

$p = \text{BCP}(b, w, \alpha)$ Bookmark-Coloring Process

Input: A bookmark b , a promotional amount w , a retention coefficient α .

Output: BCV p .

$p = 0$

$p_b += \alpha w$

if (*stopping criterion is met*) stop

for all links $b \rightarrow j$ in L

$p = p + \text{BCP}(j, (1 - \alpha) \cdot w / \deg(b), \alpha)$

end for

Fig. 4

$p = \text{BCP}(b, \alpha, \epsilon)$ Bookmark-Coloring Process

Input: A bookmark b , a retention coefficient α , and a tolerance threshold ϵ .

Output: BCV p .

Initialize Q as a single pair queue $\{(b, 1)\}$

$p = 0$

while (Q is not empty)

pop a queue Q element (i, w)

$p_i += \alpha \cdot w$

// retained portion

if ($w < \epsilon$)

// stopping criterion

continue

// to beginning of while-loop

$z = (1 - \alpha) \cdot w / \deg(i)$

// distributed amount

for all links $i \rightarrow j$ in L

// i is fixed: direct link access

if (pair (j, s) is present in Q)

// direct Q access

$s += z$

// existent element update

else

// no j element in the queue

add a new pair (j, z) to Q

// new queue element

end for

end while

Fig. 5

$[v, s] = \text{BC}(b, w, \alpha | H)$ H-Relative Conceptual Bookmark-Coloring Process

Input: A bookmark $b \notin H$, an amount w , a coefficient α , and a hub H .

Output: H -relative BCV v and blocked s .

$v = 0, s = 0$

if ($b \in H$)

// blocked portion

$s_b += w$

else

// propagated portion

$p_b += \alpha \cdot w$

if (*stopping criterion is met*) stop

for all links $b \rightarrow j$ in L

$[v, s] = [v, s] + \text{BCP}(j, (1 - \alpha) \cdot w / \deg(b), \alpha | H)$

end for

end else

Fig. 6